

1     **WHAT IS CLAIMED IS:**

- 2             1. An enhanced CMOS circuit to drive a DC motor used in a portable  
3     CD player, comprising:  
4             a first and a second switching stage (10) (10'), wherein each switching  
5     stage is formed by a pair of PMOS transistors (11) (12) connected in series and  
6     a pair of NMOS transistors (13) (14) connected in series to form a push-pull  
7     circuit; wherein one end of each switching stage is connected to a positive  
8     power supply terminal with higher voltage, and another end is connected either  
9     to ground or negative power supply terminal; wherein a node connecting the  
10    pair of PMOS connectors (11) (12) and the pair of NMOS transistors (13) (14)  
11    acts as an output of the switching stages (10) (10'); wherein a gate electrode of  
12    one of the two PMOS transistors (11) and one of the two NMOS transistors (14)  
13    are tied together to share a common input signal; a gate of the other PMOS  
14    transistor (12) is connected to a first power source with a predetermined control  
15    voltage, and a gate of the other NMOS transistor (13) is connected to a second  
16    power source with a predetermined control voltage, to form a voltage divider,  
17    whereby individual transistors tolerate an operating voltage ; and  
18             a driver stage (20) formed by two NMOS transistors (21) (22)  
19    connected in series; wherein a node connecting the two NMOS transistors (21)  
20    (22) is used as an output for connection to a DC motor (M); one of the two  
21    NMOS transistors (21) is to receive gating signals from the first switching stage  
22    (10); the other NMOS transistor (22) is to receive complementary signals from  
23    the second switching stage (10').  
24             2. The enhanced CMOS circuit to drive a DC motor according to claim

1, wherein the predetermined control voltage being applied on the gate of the PMOS transistor (12), both in the first and second switching stages (10) (10'), is to refer to an output voltage of 1.5-4 V from a first DC power supply.

3. The enhanced CMOS circuit to drive a DC motor according to claim 1, wherein the predetermined control voltage being applied on the gate of the NMOS transistor (13), both in the first and second switching stages (10) (10'), is to refer to an output voltage of 4.5V from a second DC power supply.

4. The enhanced CMOS circuit to drive a DC motor according to claim 1, wherein the predetermined control voltage being applied on one end of the driver stage (20) is to refer to an output voltage of 1.5-4V from a first DC power supply.

5. The enhanced CMOS circuit to drive a DC motor according to claim 1, wherein the first DC power supply being connected to one end of the driver stage (20) is to be derived from battery power (BAT).

6. The enhanced CMOS circuit to drive a DC motor according to claim 2, wherein the first DC power supply being connected to the gate of PMOS transistor (12) of switching stages (10) (10') is to be derived from battery power (BAT).

7. The enhanced CMOS circuit to drive a DC motor according to claim 3, wherein the second DC power supply being connected to the gate of NMOS transistor (13) is to be drawn from system voltage.

8. The enhanced CMOS circuit to drive a DC motor according to claim 1, wherein the higher supply voltage of the positive power supply terminal being connected to one end of the first switching stage (10) is the summation of

1 output voltages of the first DC power supply and the second DC power supply.  
2 9. The enhanced CMOS circuit to drive a DC motor according to claim  
3 1, wherein the higher supply voltage of the positive power supply terminal  
4 being connected to one end of the second switching stage (10') is the  
5 summation of output voltages of the first DC power supply and the second DC  
6 power supply.  
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